

Amendments to the drawings

Replacement drawings sheets are submitted adding the legend "Prior Art" to Figures 24-46.

Enclosure: Replacement Sheets (12 pages)

Remarks

In the official action, the Examiner begins by provisionally rejecting claims 11-14 under the judicially created doctrine of obviousness-type double-patenting as being unpatentable over claims 1-4 of co-pending application no. 10/729,320 (herein referred to as the DIV 1 application) in view of US Patent No. 6,201,648.

The Examiner also provisionally rejects claims 11-14 under the judicially created doctrine of obviousness-type double-patenting as being unpatentable over claims 11-14 of co-pending application no. 10/729,437 (hereinafter referred to as the DIV 2 application) again in view of US Patent No. 6,201,648.

The present application is hereinafter referred to as the DIV 3 application. Enclosed herewith are copies of the preliminary amendments filed in the DIV 1, DIV 2 and DIV 3 applications, which have been marked up to show the language by which one differs from the other.

The Examiner's first provisional rejection is based upon the DIV 1 application. Comparing claim 11 from the present application with claim 11 from the DIV 1 application, there are additional differences than that which the Examiner points out in the official action. For example, the DIV 1 application also recites that the optical elements are decentered. The Examiner has not discussed why it would be obvious to omit that limitation.

Moreover, the Examiner fails to discuss, in the official action, what would be the motivation of the person of ordinary skill in the art to modify the invention as claimed in claim 11 of the DIV 1 application to arrive at claim 11 in the present application.

For example, vis-a-vis the DIV 1 claims, the Examiner points to column 54, lines 31-54 of the '648 patent. However, at that point the inventors discuss a decentered optical system. Since the Examiner is asserting that it would be somehow obvious to omit the requirement of a decentered optical system as set forth in the invention of claim 11 of

the DIV 1 application, why is the Examiner then pointing to a decentered optical system as the basis for making the modification? Moreover, just because the decentered optical system 39 disclosed in the '648 patent has, in example 52, a rotationally asymmetric curved surface whose reflected power varies in a Y axis perpendicular to both the optical axis and the X axis, what is the motivation for exchanging that element with the claimed elements having an axis of rotation symmetry specifically set forth in claim 11 of the DIV 1 application?

Comparing the DIV 2 claims with the claims of the present application, the DIV 2 claims recite that the first optical system includes "at least one optical element having a free-formed surface" whereas the present application recites that "the first optical system includes a plurality of refracting optical elements having a common optical axis."

Moreover, the present application also recites that the second optical system includes "a reflecting optical element having a free-form surface." Why modify claim 11 of the DIV 2 application to include that? Where is this motivation in the prior art cited by the Examiner?

It is submitted that the Examiner is making these suggestions based upon a hindsight reconstruction of Applicant's claims as opposed to looking at what the prior art really teaches. People do not ordinarily change the designs of optical systems without some motivation to do so. Optical systems are obviously complex and changes are not made willy nilly just for the heck of it. There must be some motivation for doing so, and the Examiner has failed to describe what that motivation might be in the context of the claims from the DIV 1 and DIV 2 applications as compared to the claims of the present application.

The Examiner also called for a drawing amendment to add the legend "Prior Art" to Figures 24-46 of the present application. As the Examiner will note by reference to the drawing amendment submitted herewith, the requested amendment has been made to the drawings.

The Examiner is thanked for the indication of allowable subject matter in claims 11-14 vis-a-vis the prior art.

Reconsideration of this application as amended is respectfully requested.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

I hereby certify that this correspondence is being deposited with the United States Post Office with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents

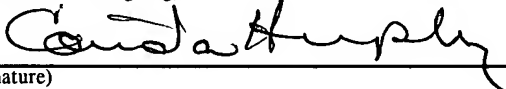
PO Box 1450, Alexandria, VA 22313-1450 on

October 22, 2004

(Date of Deposit)

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(Signature)

October 22, 2004

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Respectfully submitted,



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DIV 1

Divisional of USSN 10/031,026  
Preliminary Amendment dated December 5, 2003  
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**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (New) An image optical system in which a plurality of light beams emerging from an image-forming device on a conjugate plane A and having a divergence angle of  $10^\circ$  or greater is made obliquely incident upon a conjugate plane B to form on the conjugate plane B an enlarged image approximately similar to an image formed by the image-forming device, said image optical system comprising:
  - a first optical system and a second optical system,
  - the first optical system including a plurality of optical elements having a axis of rotation symmetry and having the function of converging the plurality of light beams emerging from the image-forming device on both of a first light beam cross section parallel to principal rays and a second light beam cross section intersecting the first light beam cross section, the optical elements are decentered,
  - the second optical system including optical elements having the function of converging light

DIV2

Divisional of USSN 10/031,026  
Preliminary Amendment dated December 5, 2003  
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### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (New) An image optical system in which a plurality of light beams emerging from an image-forming device on a conjugate plane A and having a divergence angle of  $10^\circ$  or greater is made obliquely incident upon a conjugate plane B to form on the conjugate plane B an enlarged image approximately similar to an image formed by the image-forming device, said image optical system comprising:

a first optical system and a second optical system,

the first optical system including at least one optical element having a free-form surface and having the function of converging the plurality of light beams emerging from the image-forming device on both of a first light beam cross section parallel to principal rays and a second light beam cross section intersecting the first light beam cross section,

the second optical system including an optical element having the function of converging light beams passing through the first optical system on the conjugate plane B,

the first optical system having a first reference axis passing through a position nearer to a

DIV 3

Divisional of USSN 10/031,026  
Preliminary Amendment dated April 16, 2004  
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### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-10 (Canceled)

11. (New) An image optical system in which a plurality of light beams emerging from an image-forming device on a conjugate plane A and having a divergence angle of  $10^\circ$  or greater is made obliquely incident upon a conjugate plane B to form on the conjugate plane B an enlarged image approximately similar to an image formed by the image-forming device, said image optical system comprising:

a first optical system and a second optical system,

the first optical system including a plurality of refracting optical elements having a common optical axis and having the function of converging the plurality of light beams emerging from the image-forming device on both of a first light beam cross section parallel to principal rays and a second light beam cross section intersecting the first light beam cross section,

the second optical system including a reflecting optical element having a free-form surface and having the function of converging light beams passing through the first optical system on the conjugate plane B,

the first optical system having a first reference axis passing through a position nearer to a light beam traveling through the shortest optical path from the conjugate plane A to the conjugate plane B than to a light beam traveling through the longest optical path from the conjugate plane A to the conjugate plane B, the first reference axis being perpendicular to the conjugate plane A,

the second optical system having a second reference axis passing through a position nearer to a light beam traveling through the shortest optical path from the conjugate plane A to the conjugate plane B than to a light beam traveling through the longest optical path from the conjugate plane A to the conjugate plane B, the second reference axis being perpendicular to the conjugate plane B,